GENERATIVE AI PARTNERSHIPS: SEPARATING GOOD FROM BAD

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Generative AI promises to reshape the digital world. Just under 20 months after this technology was officially announced with the launch of ChatGPT, the potential for this technology to bring transformative change is a consensus. Following concerns that they were too slow to act on the digital market in the past two decades, competition authorities across the globe have rushed to ensure that they can intervene promptly if and where needed, engaging in numerous fact-finding studies. One risk identified by authorities is the prevalence of partnerships between big tech companies and AI developer startups. A recent study by the CMA identified more than 90 such partnerships. The reality is that these partnerships differ significantly in terms of their coverage and terms. We propose a simple economic framework to assess these partnerships and identify those on which authorities should focus their attention.

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I. INTRODUCTION

Generative AI promises to reshape the digital world. Agreement is widespread that this technology will have a significant impact on the economy, as noted by the European Commission's Executive Vice President Margrethe Vestager in February 2024:[2]

The consensus is clear: this is a transformative technology; one that will change the way we work, the way we learn, the way we buy and sell - even the way we think. It will touch virtually every aspect of the economy, and it won't take long for these effects to be felt.

Since the launch of ChatGPT's OpenAI chatbot in November 2022, the rise of this technology has been impressive. Competition authorities and policymakers globally are racing to ensure they can act to ensure that competition thrives in these new markets and that they do not further entrench the positions of large technological firms. Several authorities have already conducted initial studies to understand the new Generative AI market[3] and have started to look into partnership agreements between AI startups and large incumbent digital firms.[4] The urgency to act was highlighted in Vestager's call to arms in the same speech, where she highlighted that "if we don't act soon, we will find ourselves, once again, chasing solutions to problems we did not anticipate."[5]

An issue that has been highlighted is the prevalence of partnerships between large digital players and the new digital firms forming in the Generative AI space. The concern is that these large digital players may, via these partnerships, cement a critical position in the Generative AI space while avoiding the usual scrutiny that is reserved for merger cases where a change of control occurs.[6] The Consumer and Markets Authority ("CMA"), for example, found more than 90 partnerships between Google, Amazon, Meta, Microsoft, Apple, Nvidia ("GAMMAN") (hereinafter, "big tech"), and AI startups. It subsequently opened investigations into Microsoft's partnerships with Inflection AI, Mistral AI, and OpenAI and Amazon's partnership with Anthropic.[7]

We look into: How is the Generative AI market shaping up and what are its primary business models? What are the theories of harm that underpin existing concerns around partnerships? How can we use the economic toolbox to assess partnerships and identify those that are more likely to create competition concerns?

II. MARKET DEVELOPMENTS

Sophisticated statistical models, often referred to as "foundation models" ("FMs") are at the center of the Generative AI revolution. These models power Generative AI systems and applications and can produce a variety of outputs across different domains and modalities (e.g. video, text, code) based on users' prompts. The development and training of these models typically require vast amounts of data, significant computing power (high-end clusters usually accessible only via established cloud service providers using specialized chips called graphical processing units), and expertise. These models can be further fine-tuned for specific tasks (e.g. coding) or domains (e.g. legal documents) by either the original AI model developer or other players and deployed in downstream markets where they are offered to users. See Figure 1.

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2   Margrethe Vestager, Executive Vice President, European Commission. Making Artificial Intelligence Available to All - How to Avoid Big Tech's Monopoly on AI. Brussels (Feb. 19, 2024).

3   (i) CMA, *AI Foundation Models Update paper* (2024), (ii) Autoridade Concorrência, *Competition and Generative Artificial Intelligence* (2023), (iii) Press Release, European Commission, Commission launches calls for contributions on competition in virtual worlds and generative AI, (Jan. 9, 2024), https://ec.europa.eu/commission/presscorner/detail/en/IP_24_85.

4   See, for example, Press Release, CMA, CMA seeks views on AI partnerships and other arrangements (Apr. 24, 2024), https://www.gov.uk/government/news/cma-seeks-views-on-ai-partnerships-and-other-arrangements.

5   Vestager, *supra* note 2.

6   A joint submission to the CMA on these partnerships accuses large digital companies of 'deliberately reconfiguring their "deals" to look like innocent "agreements," which is fundamentally a circumvention of scrutiny.' Irish Council for Civil Liberties, Open Markets Institute, Foxglove, Rebalance Now, ARTICLE 19 & Mozilla Foundation, *Submission to CMA on Microsoft-OpenAI "partnership" merger inquiry*, Joint Submission to the Competition and Markets Authority, (8 Jan. 2024), available online at https://www.iccl.ie/wp-content/uploads/2024/01/20240108-CSOs-Submission-To-CMA-on-MS-OpenAI-partnership.pdf, visited June 30 2024.

7   CMA, *supra* note 34.

Figure 1: Gen AI value chain[8]
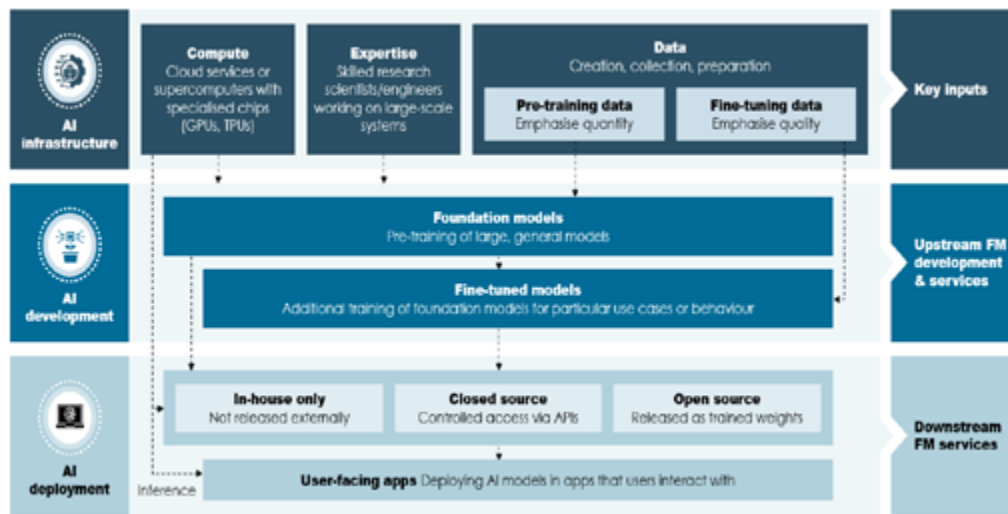
The Generative AI market is currently highly diversified, with various degrees of vertical integration among operators, who are also active in adjacent markets.[9] A new wave of specialized AI startups such as OpenAI, Anthropic, and Mistral has successfully developed top-performing models in competition with the more established digital players already present in the upstream and downstream markets.

The number of models available is constantly growing and there are now more than 330 FMs, according to the Stanford database that keeps track of all existing models.[10]

The models available in the market present varying degrees of openness.[11] Some models are released together with their tuning parameters, allowing other developers with limited resources to fine-tune and build their own applications on top of existing models. Others are closed and not available for third parties to develop.

At the downstream level, user adoption is still at an early stage. AI solutions range from general-purpose chatbot models available to consumers to tailored enterprise solutions for internal processes specialized in specific tasks, such as writing legal documents. Smaller AI developers and big tech alike are currently experimenting with different deployment and integration strategies.[12]

III. PARTNERSHIPS PREVALENT AND UNDER SCRUTINY

Due to the complex value chain of AI, various links between big tech and innovative AI startups are present at different levels. Highly innovative AI startups are mostly present at the AI model development level while big tech has access to scarce and costly inputs upstream such as cloud computing and is active in downstream markets with access to a large user base. See Figure 2.

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8   Copenhagen Economics, based on CMA, *AI Foundation Models Update paper* (2024).

9   Richard May, *Artificial intelligence, data and competition* (OECD, Working Paper No. 18, 2024), at 25.

10   Stanford CRFM, *Ecosystem Graphs for Foundation Models*, (2024), https://crfm.stanford.edu/ecosystem-graphs/index.html?mode=table.

11   Irene Solaiman, *The Gradient of Generative AI Release: Methods and Considerations*, in Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency 111, 111-22 (June 2023).

12   CMA, *supra* note 3.

Figure 2: Presence of big tech across the GenAI value chain
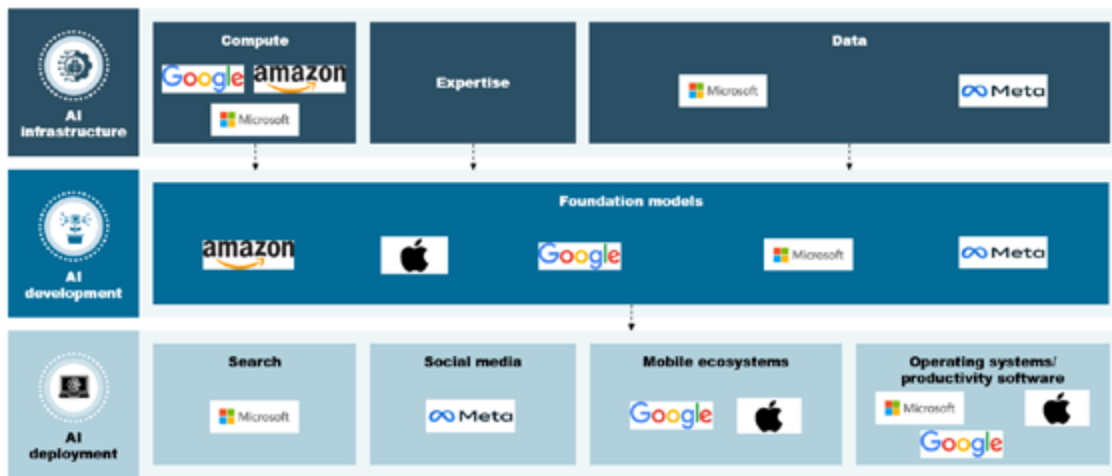
Source: Copenhagen Economics, based on CMA, *AI Foundation Models Update paper* (2024).

As a result, big tech and AI developers have created many complex collaborations and "strategic partnerships," often involving significant investments. In its recently updated report on FMs, the CMA has identified more than 90 strategic partnerships and investments between GAMMAN and AI startups.[13]

As described by the CMA, these complex partnerships may involve a combination of types of agreements such as:

- *computer partnerships*, in which AI startup developers gain access to computing infrastructure on favorable terms,
- *distribution partnerships*, in which cloud service providers add AI models to their cloud service offerings or integrate them into their digital services, and
- *data partnerships*, in which one party is given access to data controlled by the other.[14]

A potential concern is that big tech can use their financial resources and strong position on the infrastructure (upstream) and/or deployment (downstream) levels to extract favorable partnership terms with new startups and further strengthen their position in existing digital markets or gain a strong position in new markets.

The concerns can be broadly classified into the following three categories:

a) elimination or significant reduction of potential competition from the AI startup partner or the big tech's own models;[15]
b) foreclosure of rival AI players by favoring the selected AI startup partner;
c) further entrenchment of the big tech partner's existing strong position in adjacent or complementary markets where the AI model could be relevant.

We briefly explain these potential concerns below.

First, big tech firms active in developing their own Generative AI solutions may use strategic partnerships to eliminate or reduce the potential competition posed by the AI startup partner or steer it not to compete directly. In principle, it could be difficult to see why an AI developer would enter into a partnership whose terms would hamper its ability to compete. The big tech partner could, however, leverage its control over key inputs to monitor and influence the startup's strategic direction and innovation in a way that benefits its own business.[16] Equally, if the partnership gives the big tech partner a significant proportion of the AI startup's downstream profits, this may hamper its incentive to develop and invest in its own models.

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13 CMA, *supra* note 3.

14 CMA, *supra* note 4.

15 In merger situations, this is often referred to as a "reverse killer acquisition."

16 Cristina Caffarra, *The Global AI Conundrum for Antitrust Agencies*, Tech Policy Press (Feb. 2024), https://www.techpolicy.press/the-global-ai-conundrum-for-antitrust-agencies/.

Second, because of its prominent position in the AI value chain, the big tech partner may have the ability and incentive to foreclose the rivals of its AI startup partners. This could limit the choice of AI models available in the market in the future, thus harming final users. Foreclosure could be achieved either by limiting access to an important input, such as cloud computing power, or an important distribution channel downstream through strategies such as bundling, tying, and preferential treatment of the partner AI model. For such a concern to be valid, the big tech partner must already enjoy significant market power in either the upstream or downstream market. It may be difficult, however, to square the sheer number of existing partnerships with the idea that they are used to favor a limited number of AI startups, although big tech may have partnered with many suppliers at an early stage to find the most promising smaller number of suppliers later.

Finally, the big tech partner may obtain exclusivity or other favorable terms (e.g. privileged or early access) for the use and distribution of the startup's AI models' adjacent or downstream digital services where strong complementarities with Generative AI technology are present. See, for example, Microsoft's integration of Copilot, which is based on OpenAI's GPT model, into its productivity suite. This may, in theory, allow Microsoft to further entrench its position in adjacent markets in which it may already possess market power. In this case, the partnership would pose a risk if the AI startup partner offered a particularly strong model or solution that could give an advantage that is significant and difficult to replicate when paired with the big tech's existing service.

The risks described above might be amplified by specific structural characteristics of digital markets, such as the presence of economies of scale and scope, network effects and feedback loops, that would make them prone to tipping and winner-take-all or winner-take-most dynamics. However, it remains to be seen whether these features, previously observed in digital platform markets, will be equally present in the Generative AI space.

Competition authorities have already started to investigate partnerships and investments between large tech players and startups. In particular, the European Commission has issued a call for contributions on competition in Gen AI,[17] while the CMA has launched investigations into the Microsoft/Open AI,[18] -Microsoft/Mistral,[19] and Amazon/Anthropic[20] partnerships.

IV. AN ECONOMIC FRAMEWORK

To fully assess the potential risks related to partnerships, it is necessary to carefully review their terms in detail. The reality is that significant differences exist between all partnerships available, and therefore a framework is necessary to identify those that raise concerns and those that do not. From an economic perspective, the key question will be to understand how a partnership may affect the partners' decision-making. The ability, incentive, and effects framework commonly used in merger assessment can be used in this setting. This economic framework and evidence may need to be complemented with additional evidence (such as internal documents) due to the very high levels of uncertainty when assessing markets with high degree of uncertainty such as the Generative AI and other digital markets.

First, we need to assess whether a particular partnership may affect a partner's **ability** to influence market outcomes, either by changing the behavior of the other partner (e.g. through significant control over their decisions) or due to existing market power. Second, we need to understand how the **incentives** of the partners (or, in case of a change in control, the joint entity) change as a result of the partnership and whether this change could lead to anti-competitive behavior. Finally, we need to evaluate how those changes in the decision-making process could impact competition and consumers, i.e. their **effect**. We now consider these in turn.

A. Ability

An economic assessment should start by understanding how a specific partnership affects the partners' ability to significantly affect market outcomes. This can be, for example, through the foreclosure of rivals or a decrease in innovation.

The change in ability brought by the partnership can come, for example, if one of the partners (typically the big tech partner) gains the ability to influence the decisions of the other (typically the AI startup), i.e. if the big tech partner gains a form of control over the AI startup.

The assessment should consider different provisions of the contract that may result in either direct control over the AI startup's decisions (e.g. via shareholdings, or contractual provisions that inhibit the startup's ability to act freely) or indirect control gained, for example, via a

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17 European Commission, *supra* note 3.

18 CMA, *supra* note 4.

19 CMA, *Microsoft / Mistral AI partnership merger inquiry*, (Apr. 2024), https://www.gov.uk/cma-cases/microsoft-slash-mistral-ai-partnership-merger-inquiry.

20 CMA, *Amazon / Anthropic partnership merger inquiry*, (Apr. 2024), https://www.gov.uk/cma-cases/amazon-slash-anthropic-partnership-merger-inquiry.

strong economic dependency. For example, provisions that give the big tech partner exclusive access to the AI startup's technology could limit the startup's freedom and are, therefore, a form of control. Equally, a commitment to use the cloud services of a particular supplier exclusively (or for the majority of the startup's needs) could create a strong economic dependency that could give rise to control if the startup's position relative to the big tech firm meant that it could not compete effectively without risking losing access to inputs. In its assessment of the Microsoft/Mistral partnership, the CMA concluded that Microsoft did not gain the ability to control Mistral after reviewing, *inter alia*, Microsoft's votes at shareholders meetings, its control over Mistral's board, the compute power commitments made by Mistral, the distribution agreement allowing Microsoft to distribute Mistral's products, and the possibilities of future collaboration envisaged in the agreement.

While control plays a significant role in understanding a partnership's impact on the firm's ability to negatively influence market outcomes, it is not the only factor. On the one hand, control alone is insufficient to create an ability to foreclose rivals if none of the firms have market power or access to a unique asset. Even where full control is present, such as after a merger, anti-competitive effects do not follow. On the other hand, a partnership may create an ability to foreclose rivals via means other than control, such as when the big tech partner gains access to a more powerful AI model, even if not exclusively. This access may be relevant when assessing a theory of harm related to entrenchment of market power in a market where the big tech partner already has a strong position. In this assessment, it is necessary to consider the complementary assets and capabilities that the startup's model may bring to the partner, and whether these complementarities are available to other potential competitors (either through the same or alternative AI models).

Finally, an ability to engage in anti-competitive behavior may already be present before the partnership, for example, if the big tech firm in the partnership controls access to essential input such as cloud computing, which is required for innovation in the Generative AI space.

B. Incentives

The ability to negatively affect market outcomes is not sufficient for a partnership to be anti-competitive by itself. The partnership must also create an incentive for one or both of the partners to do so. Partnerships can change the **incentives** of both firms by, for example, including profit or revenue-sharing provisions. The extent of the change in these incentives will depend on the proportion of revenues or profits that are shared and the total amount of those revenues or profits that the partner stands to gain through anti-competitive behavior.

In principle, depending on available information, it may be possible to simplify the evaluation of incentives to a simple calculation of the potential gains or losses from potentially anti-competitive behavior. Various economic tools are frequently used in merger assessment to directly calculate the incentive of a merged entity to affect prices, innovate or engage in foreclosure.

If the concern relates to the deprecation of the AI startup's or the big tech partner's AI models, then tests typically applied to assess horizontal mergers can be used. Control and profit sharing may, however, work in opposite directions: A large tech company with significant control over the tech startup's competitive decisions will have a greater incentive to deprecate the startup model the lower its share of the AI startup's profits. In contrast, even without any control, a higher share of revenues or profits from the AI startup increases the incentives to deprecate or reduce the competitive pressure from its own AI model, all other things being equal.

If the concern relates to foreclosure, then the incentives will depend on the relative margins of the products concerned. For example, if the concern is that the large tech company may withhold or raise the cost of access to its input, such as cloud computing, then the company will compare the margins it may lose from customers who will no longer purchase this input and the potential share of margins that it could win from customers who are diverted to the AI startup's products. Equivalently, if the concern is that foreclosure may occur through access to an important distribution channel, the large tech company will need to weigh any potential losses from closing that distribution channel (for example, in the case of a cloud computing or productivity service, the loss of customers who prefer access to a diversity of products) with potential gains from consumers diverted to the AI startup's products. In each instance, the degree of consumers who are diverted will depend on the alternative options available to the rival suppliers and their consumers:

- Considering the upstream foreclosure of access to cloud computing, the loss of profit is likely to be high if AI developers have access to alternative sources for their cloud computing needs.
- Considering the downstream foreclosure of a distribution channel, multi-homing by end-users on AI models and distribution channels would make it less profitable.

While economic models may allow the calculation of the change in incentives of each partner, a great degree of uncertainty is always involved in these calculations. For instance, potential future profits in the Generative AI sector may be quite uncertain. It is important, therefore, to incorporate this uncertainty into any model and to ensure that results are consistent with observed behaviors.

Additionally, as with ability, the incentive to engage in potentially anti-competitive behavior may already be present, and a partnership only gives a firm the ability to do so. For example, if the concern is that the large tech company may strengthen its position through the integration of the AI startup's model into its own existing downstream or adjacent products, that incentive may already be present (which is ultimately what drives competition), but guaranteed and privileged access to the AI startup's AI models gives the large tech firm the ability to do so.

C. Effects and Efficiencies

After establishing an ability and an incentive to affect market outcomes, it is necessary to understand whether the conduct of the partner firms can negatively affect the market and result in consumer harm. To do so, it is important to first determine the markets which are allegedly affected, and then whether the partners or any rivals allegedly foreclosed are sufficiently important for the normal process of competition in that market. For example, if a partnership allegedly diminishes the ability and incentives of the AI startup to compete effectively, this will be more problematic if the AI startup is an important competitor (e.g. because of the innovativeness of its technology or the uniqueness of its product offer).

Moreover, when assessing the effects of a partnership agreement it is important to remember that partnerships can also generate pro-competitive effects.[21] For example, they can facilitate the supply of specialized input in large quantities from a single provider (e.g. large numbers of accelerator chips for highly demanding workloads). This can generate efficiencies by optimizing processes and allowing AI startups to scale up.

As recognized by economic theory[22], partnerships or vertical supply agreements may also support incentives to undertake relationship-specific investments from both parties. For example, partnerships may help develop new IT system infrastructure and system configurations designed specifically for the training of the startup AI model.[23] At the deployment level, strategic partnerships may improve the degree of integration of startup AI models into the big tech partner's digital services. Better integration may increase digital service quality and unlock further complementarities to the benefit of consumers and business users (one-stop-shop efficiencies). These effects will need to be carefully weighed against any alleged anti-competitive effects before deciding whether a particular partnership can be considered anti-competitive.[24]

V. CONCLUDING REMARKS

Competition authorities across the globe have rightly recognized the importance of paying close attention to developments in the Generative AI field. This is a natural reaction to the transformative nature of this industry, particularly given the lessons learned from previous developments in the digital sector, where competition authorities felt that acting too late resulted in the creation of a small number of players with significant market power.[25]

In a recent update on its investigation into FMs, the CMA took a particular aim at the increasing number of partnerships between big tech and AI startups. In its report, the CMA identified more than 90 such partnerships, and it has since opened investigations into at least two of them, in addition to its already existing investigation into Microsoft/Open AI. We set out how the existing economic framework can help understand and accurately assess the impact of these partnerships, thus allowing authorities and firms alike to identify potentially problematic ones.

Given the varied levels of investments, conditions, profit sharing, and control, the reality is that not all partnerships are equal. A careful, considered, and individual economic assessment should therefore be undertaken for each such partnership before deciding whether (and what type of) intervention is required.

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21   CMA, *supra* note 4.

22   William S. Comanor & H.E. Frech, The Competitive Effects of Vertical Agreements, 75 Am. Econ. Rev. 539, 539-46 (1985).

23   For instance, Microsoft invested in supercomputers designed in collaboration with OpenAI. See Microsoft, *Microsoft announces new supercomputer, lays out vision for future AI work*, (May 2020), https://news.microsoft.com/source/features/ai/openai-azure-supercomputer/.

24   In the context of an Article 101 or 102 investigation, authorities may consider further whether any terms and conditions of the partnership that create alleged anti-competitive effects are objectively necessary to bring out the efficiencies identified. In such an assessment, competition authorities should be careful not to be too prescriptive, to avoid limiting what has been an important avenue for AI startups to access much-needed funds and inputs.

25   As recognized in recent digital regulatory frameworks such as the Digital Markets Act in Europe, or the new powers granted to the CMA in the Digital Markets, Competition and Consumers Bill in the United Kingdom.

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